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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/262,912	03/05/1999	TAPANI VUORINEN	30-497	1188

7590 02/05/2003

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EXAMINER

ALVO, MARC S

ART UNIT	PAPER NUMBER
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1731

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DATE MAILED: 02/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/262,912

Applicant(s)

VUORINEN ET AL.

Examiner

Steve Alvo

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1731

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21, 26-28, 30-32, 34, 39 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over WO 91/05909 in view of WO 98/11295 (U. S. Patent 6,123,908 being used as a translation) and WO 96/12063 or BHATTACHARJEE et al or LACHAPELLE.

WO 91/05909 teaches bleaching kraft pulp in a first 0.4% to 1.0% (Table 2 on pages 14 and 15) chlorine dioxide in a chlorine dioxide bleaching step for a time of 5 minutes at a temperature of 85°C (over 70°C) a pH maintained between 6.0 and 7.5 (e.g. over 4.0 or 5.0), then adding acid to reduce the pH to 3.8 and bleaching in a second chlorine dioxide step at a temperature of 85°C (over 80°C) for 120 minutes or more, See WO 91/05909, page 8, line 23- page 9, line 15. If WO 91/05909 does not teach the exact claimed conditions then such would have been obvious to the routineer to optimize the bleaching. For example, it is known that higher temperature decrease the bleaching time required to obtain a certain brightness. Thus it would have been obvious to one of ordinary skill in the art that at in the first stage of WO 91/05909 when using the highest disclosed (85°C) temperature to use the shortest reaction time

Art Unit: 1731

(5 minutes). It would have been obvious that even higher temperatures would result in even shorter reaction times. WO 91/05909 teaches using sequences which include a second chlorine dioxide stage. See Tables 1-3 of WO 91/05909 for chlorine dioxide dosage of 0.5-1.5% in the first chlorine dioxide stage and 0.5 to 2.0% in the second stage. It would have been obvious to perform the bleaching and acid adjusting steps in inlet lines and/or reactors as such is taught by WO 91/05909, e.g. initial D step in inlet line reacted in upflow reactor and/or J or U tube, acid added to reactor and/or J or U tube outlet line and last chlorine dioxide step occurs in downflow reactor. WO 98/11295 teaches a process very similar to the instant process wherein the first stage can be an oxidizing stage followed by an acid stage (translation, column 3, lines 14-19) and teaches that the acid stage can be used to remove the hexenuronic acids (see abstract). WO/98 11295 further teaches the advantages of using of using a TCF or ECF bleaching process. It is well known in the art that ECF process can be used by substituting chlorine dioxide for chlorine in ECF (essentially chlorine free) bleaching processes to prevent discharge of chlorinated organics, e.g. dioxins. It would have been especially obvious to use chlorine dioxide in the first stage of WO 91/05909 to prevent discharge of chlorinated organics as taught by WO 96/12063 or BHATTACHARJEE et al or LACHAPELLE. This would have been especially obvious as WO 91/05909 teaches the process could be carried out on any D bleaching stage process (page 4, lines 8-10. This would include the TCF processes of WO 96/12063 (page 7, line 19) or BHATTACHARJEE et al or LACHAPELLE, e.g. using the D(EO)DED process disclosed by LACHAPELLE (page 181, column 2) instead of the CD(EO)DED process of WO 91/05909. It would have been especially obvious to use higher temperatures and shorter acid treatment times, in the acid stage of WO 91/05909, as such an acid treatment is taught by WO 96/12063. It is

Art Unit: 1731

noted that such an acid treatment can come before or after the chlorine dioxide stage, e.g. see WO 96/12063, page 10, lines 17-20. It would thus have been obvious to place the acid stage after the first D stage and before the second D stage in a DEDED bleaching sequence.

Claims 22-24 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 91/05909 in view of WO 98/11295 and 96/12063 or BHATTACHARJEE et al or LACHAPELLE as applied to claim 21 above, with or without VUORINEN et al or WO 96/12063.

WO 91/05909 teaches maintaining the pH during the first step between 6.0 and 7.5 (over 5.0). If WO 98/11295 doesn't teach that the chlorine dioxide does not react with the chlorine dioxide, then VUORINEN et al teaches that hexenuronic acids react with the ene functionality of hexenuronic acid groups and that this can be prevented by converting the hexenuronic acid groups to 2-furoic plus formic acids and 5-carboxy-2-furaldehyde through acid hydrolysis. It would have been obvious to improve the brightness stability of the pulp of WO 91/05909 by removing the hexenuronic acids by performing an acid hydrolysis in the manner taught by VUORINEN et al or WO 96/12063.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 91/05909 in view of 96/12063 and 96/12063 or BHATTACHARJEE et al or LACHAPELLE as applied to claim 21 above, and further in view of DEVENYNS et al.

DEVENYNS et al teaches using a chelating agent after a chlorine dioxide stage to remove metal ions from the pulp prior to a peroxide bleaching stage. It would have been obvious if the pulp is to be further bleached with peroxide to treat the pulp with a chelating agent as taught by DEVENYNS et al.

Art Unit: 1731

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 91/05909 in view of 96/12063 and 96/12063 or BHATTACHARJEE et al or LACHAPELLE in view of VUORINEN et al as applied to claim 24 above, and further in view of HISTEAD et al.

HISTEAD et al teaches using chlorine dioxide bleaching times decrease at higher temperatures (see section on page 41 (T36) under Table I) and teaches at 80°C that a reaction time of 2 minutes can be used. It would have been obvious to use the 2 minute reaction time of HISTEAD et al for the first step of WO 91/05909.

Claims 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 91/05909 in view of 96/12063 and 96/12063 or BHATTACHARJEE et al or LACHAPELLE and VUORINEN et al as applied to claim 4 above, and further in view of CARLES et al.

It would have been obvious to one of ordinary skill in the art to use chlorine dioxide temperatures of up to 90°C during the chlorine dioxide bleaching steps of WO 91/05909 as such is taught by CARLES et al.

Claims 33, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 91/05909 in view of 96/12063 and 96/12063 and 96/12063 or BHATTACHARJEE et al or LACHAPELLE and VUORINEN et al and CARLES et al as applied to claim 38 above, and further in view of HISTEAD.

HISTEAD et al teaches using chlorine dioxide bleaching times decrease at higher temperatures (see section on page 41 (T36) under Table I) and teaches at 80°C that a reaction time of 2 minutes can be used. It would have been obvious to use the 2 minute reaction time of HISTEAD et al for the first step of WO 91/05909.

Art Unit: 1731

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Any inquiry concerning this communication or earlier communications from the **primary examiner** should be directed to **Steve Alvo** whose telephone number is **(703) 308-2048.** The Examiner can normally be reached on Monday - Friday from **6:00 AM - 2:30 PM (EST).**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Steve Griffin, can be reached on 703-308-1164.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the **Group receptionist** whose telephone number is **703-308-0661.**

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Application/Control Number: 09/262,912

Page 6

Art Unit: 1731

and will be staffed by the Technical Information Specialists who will serve as Customer Service Representatives (CSR).

A handwritten signature in black ink, appearing to read 'Steve Alvo', is positioned above the printed name.

**STEVE ALVO
PRIMARY EXAMINER
ART UNIT 1731**

MSA
1/27/03